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Sketch of the new anatomy and physiology of the brain and nervous system
of Drs. Gall and Spurzheim, considered as comprehending a complete system
of zoonomy

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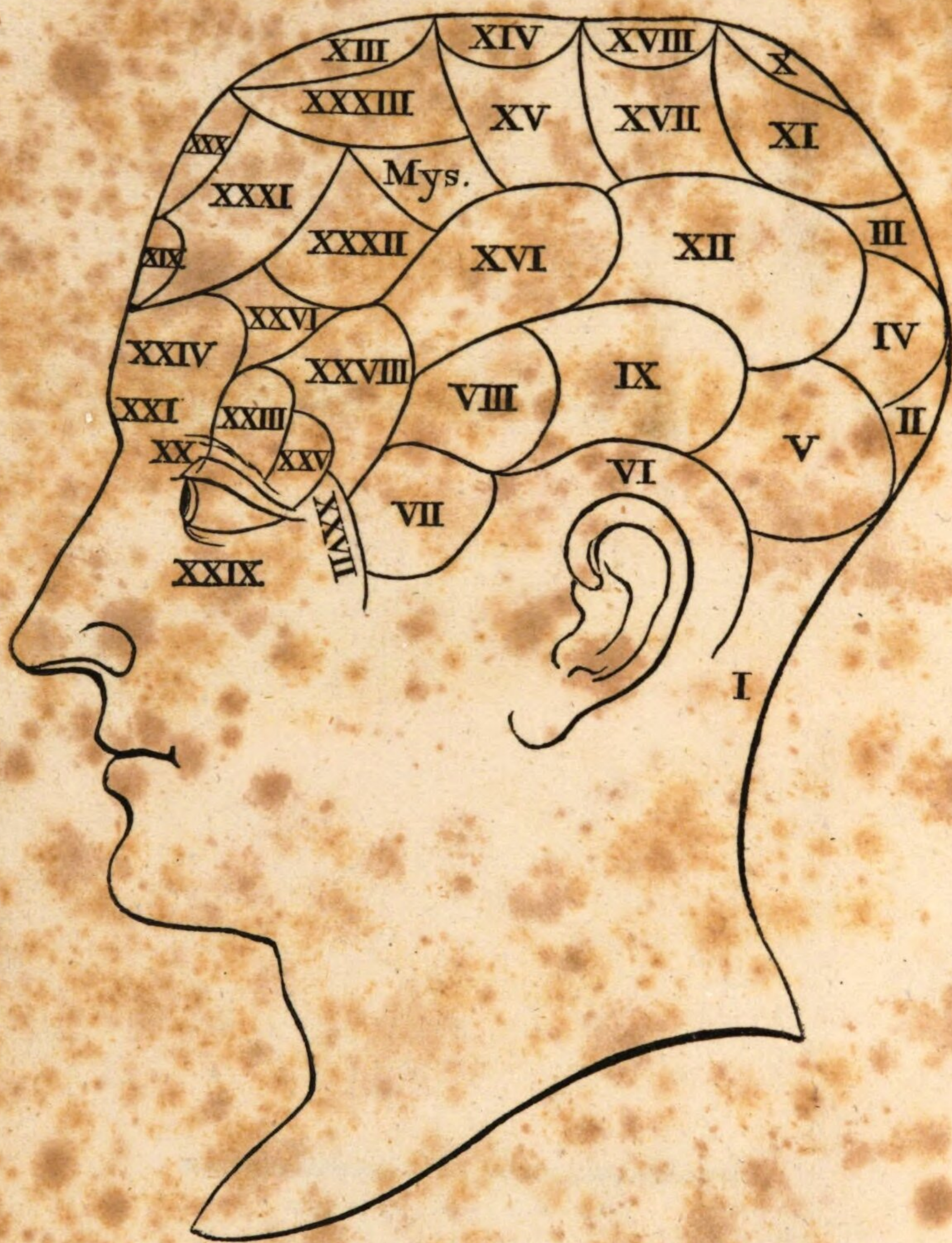
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SKETCH
OF THE
New Anatomy and Physiology
OF THE
BRAIN AND NERVOUS SYSTEM
OF
DRS. GALL AND SPURZHEIM,
CONSIDERED AS COMPREHENDING A COMPLETE SYSTEM OF
Zoonomy.

WITH OBSERVATIONS ON ITS TENDENCY TO THE IM-
PROVEMENT OF EDUCATION, OF PUNISHMENT,
AND OF THE TREATMENT OF INSANITY.

REPRINTED FROM THE PAMPHLETEER,
WITH ADDITIONS.

BY THOMAS FORSTER, F.L.S.
OF CORP. CH. COLL. CAMBRIDGE.

AUTHOR OF RESEARCHES ABOUT ATMOSPHERIC PHENOMENA,
OBSERVATIONS ON THE SWALLOW—NOTES TO THE
DIOSEMEA OF ARATUS—PHYSIOLOGICAL
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PREFACE.

Most of the Observations contained in the following sheets were originally published in a short tract in the Pamphleteer, No. IX. Desirous of making them, however, more public, and of giving a greater number of persons the opportunity of acquiring a general view of the new System of the Anatomy and Physiology of the Brain, the novelty whereof has excited so much public interest of late, and the culture whereof seems pregnant with such important consequences to Society, some of my friends expressed a wish

that it might be printed off separately with additional observations, and a description of the particulars rather more enlarged. All I have therefore to offer to the world herein is a compendious outline of a series of discoveries in the natural history of man, and of other animated beings, made by Drs. Gall and Spurzheim, but confirmed by numerous others who have followed their mode of enquiry into the principles of animal organization, and its various functions. And I trust it will cause those who are qualified for a deeper investigation of the subject, to follow it up by a perusal of the more copious and detailed observations of Dr. Spurzheim in his recent work on the Physiognomical System ; and by attendance on the demonstrative courses of Lectures, which he is now giving in London. Because I believe this to be the only means of acquiring a practical and

consequently useful knowledge of the Physiology of the Brain.

Previous to the abovementioned anatomists, the structure of the brain and nervous system being unknown, the Physiology was consequently only founded on imperfect views, and the observation of a few scattered facts. The light of Science was however rising, and the students of nature began to foresee that in these investigations the true principles of actions, both automatic and animal, must be sought for. Pursuing continually the true method of philosophizing by inferring cause and effect from the regular conjunction of phenomena, and by the use of reasonable analogy, and exerting their industry through laborious dissections of the Brain and Nerves, and through a most extensive examination of living beings, regardless of the ignorance, the pre-

judices, and the jealousies of their contemporaries, and surmounting by perseverance every opposition they met with, Gall and Spurzheim at length announced the solution of the Problem, which Richerand had anticipated as the ultimate achievement of Physiology; and pointed out a method, the physical structure of the individual being given, to find the moral and intellectual qualities.

SKETCH,

&c. &c.

AN intimate knowledge of the nature of the human mind, and of the principles of the actions of Man, has ever been regarded as the most important object of research, to which Philosophy could aspire. And consequently we find, that moral philosophy comprising inquiries into the nature of mind, has engaged the attention of reflecting persons in all ages. It is, however, equally clear, that the systems of different philosophers, who have employed their ken on these subjects, have hitherto usually been

contradictory and futile. And this circumstance has arisen, in our opinion, from the peculiar manner in which Man has always been studied. Naturalists, in examining the nature of different animals, have gone on a much more rational plan of investigation, than philosophers, who have examined Man. The former, in examining the nature of an animal, have observed its peculiar habits, with all the circumstances under which it may act, and compared the habits with the structure. Thus animals are classed according to certain generic and specific characters, both respecting structure and habits. And the naturalist admits peculiar instincts, or propensities, arising from the organization of each animal, as the cause of its character. These instincts Nature has adapted to the plan of life proposed for each species. Just so then should Man be studied, and in every individual in whom there is a diversity in the character and actions, we should have looked for some differences in the primitive construction of his animal system. I shall

not dwell on the erroneous ways in which different writers have studied human nature, as these are fully treated of by Dr. Spurzheim, in his recent work on the Physiognomical System; and as they cannot be comprehended by the few pages, and few days, allotted to me for these sheets, I shall merely observe, that the system of the Philosophy of mind before my consideration professes to treat of Man in the aforementioned manner; and that it differs in this respect from former systems of Philosophy.

There are certain leading doctrines of the New System of Zoonomy, to which, though they have been deduced from facts hereafter to be related, it may be right to advert as preliminary to the descriptive part of these observations, because they will prepare the reader, in some measure, for the consideration of the particular facts, by presenting to him a view of the general principles. I shall therefore divide the subject into the following distinct considerations.

The General Principles of the System. The History of the Discoveries whereon the system is founded. The Anatomical Structure of the Brain and Nerves. The division of the Brain into separate organs, and their respective place, and the Physiology of each. They are divided into, 1st. the organs of the propensities ; and 2nd. those of the sentiments, constituting what the French call L'Ame, and the Germans Gemüth ; 3dly. the knowing faculties ; and 4thly, the reflecting faculties, constituting what the French call L'Esprit, the Germans Gheist, and the English the Intellect. I shall then briefly consider,—The Application of this system to Education ; as regards, 1st. the cultivation of the intellect, and 2dly, the regulation of the moral character. The influence it will have on the mode of adapting to malefactors in houses of correction a punishment commensurate to their peculiar vices. And the improvement of the treatment of insane persons, at present so much neglected. In the course of these observations, I shall briefly notice

some of the popular objections made to the new Anatomy and Physiology of the Brain, with the proper answers to each.

SECTION I.

Of the General Principles.

THE first principle of this doctrine is, that all the faculties of the mind are innate, or in other words, that there are material conditions of all the different manifestations of the mind.

Two objections have been made to this assertion, namely, 1st. that it leads to Fatalism, and 2dly, that it is favorable to Materialism. To which it must be replied, 1st. That although we have material organs of the different faculties of the mind, yet this circumstance does not make the proper ac-

tions of each organ necessary and irresistible. On the contrary, we admit an arrangement of certain organs, which gives Will, and that we can thereby control our propensities and sentiments, for the attainment of a moral character, and can direct our intellectual faculties in the acquirement of knowledge. The objection therefore falls to the ground, which accuses our doctrine of supporting that of Fatalism. 2d. It may be replied, that though the organs of the mind are material, we do not identify them with the mind; they are only the material conditions of the particular manifestations of the mind. Futile therefore are the objections which impute to our doctrine the charge of inculcating Materialism.

The organs are active during the manifestation of the faculties; but they must have a moving principle, which, I think, we may rationally call the mind. I regard the mind as always acting by means of organs. It is therefore conscious by mate-

rial conditions, but this is not making the mind material. Nature has adapted organs fitted for the performance of all the functions of the mind, and these organs vary in every animal, according to its particular nature ; and in every individual, according to its peculiarities of character.

There are cases, in which particular organs are so strong, in proportion to the rest, that certain propensities can hardly be controlled by the Will, and there are others, in which important organs are wanting ; but these cases must be referred to original malformation, and classed among hereditary disorders. Almost every being is intitled to some respect, and may be of some use in society ; and the view, which Zoonomy presents of Nature, inclines us to benevolence, must humble the pride of the arrogant and lofty, lead to indulgence of the failings of others, and promote liberality towards mankind. For it shows how one individual cannot think and act precisely as another does ; how much error is

to be pitied, and how important a duty it is to endeavour to counteract by education in infancy the original defects of organization. It also shows the importance of a judicious selection of partners in marriage, since it has ever been well known, what our doctrine confirms, and sagacious naturalists have always taught, namely, that defects of organization, and therefore the first conditions of characters, are hereditary. By indulging evil propensities in ourselves, too, we may strengthen the disproportion of organs, which ought to be in a certain relation to each other. This defective organization may be handed down to posterity ; and thus we see how the evil of the father may be visited on the children, even unto the third and fourth generation.

The second principle of the system is, that the organs exist independently of each other, and that there is no proportion between them. It is not necessary, therefore, because a person has the organ of one faculty very strong, that he shall therefore have

any other well proportioned. This accounts for the great disproportion between the different faculties in the same person, and confutes the vulgar prejudice, that a man must be naturally just, because he is benevolent; or that because a man is a mathematician, he therefore could have been a poet, or a linguist, if he had given attention to Composition or to Philology: an error, alas, too common, as it seems to have caused many academies of instruction to erect one particular science as a standard and test of excellence of intellect in general. This consideration of the plurality and the frequent disproportion of the organs explains particular genius; and shows that a head, most perfect, is one which contains the greatest number of organs in the greatest perfection. It must be remembered, that every individual of the same species, except idiots, are possessed of all the organs, and the difference between persons consists in the different degree and proportion of the developement of the parts, and in the degree of their activity.

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3dly. Though the relative bigness of the different organs, which is innate, or born with us, is usually preserved through life; yet their activity is greatly to be increased or diminished by exercise, or by want of excitement: hence education is important. Even the bigness itself seems capable of being in some degree augmented by early exercise.

4thly. We may say that there are four considerations which belong to an organ, when we regard it as an instrument of a faculty—1st. Its size, which is the most important, and is marked on the outside of the head.—2d. The degree of activity. This generally belongs to the nervous system in general, or may be increased in any particular organ by exercise.—3d. The particular sort of affection. For there appear to be different affections in the same organs, though we do not know exactly, at present, whether they are performed by the same fibres: and there seem to be many strange idiosyncracies in the affection of

organs. Lastly, we must consider the mutual influence of the organs on each other.

5thly. The organs, and indeed all other nerves, are nourished like every other part of the body, and are liable to general and to particular diseases of structure; and to die, or become inactive, either separately or together, according to circumstances. Thus a man loses some faculties before others, and the mental infirmities of age are often partial. I cannot help observing here an impropriety of expression, which is very common, and consists in calling age a second childishness: whereas, nothing can in reality be more different. Childhood is a state in which the organs have not yet gained knowledge, for want of experience. Age, a state in which experience is futile, from the decay of organization. A fancied similarity of effects is produced by quite opposite causes.

6thly, and lastly. The size and figure of the scull are conformable to that of the

brain; hence the organs are indicated on the outside of the head. It has been objected, that there are irregularities in the thickness of the skull; but these are too insignificant to puzzle the experienced craniologist. Dissection has proved a determined relation between the external form and the developement of the organs within the cranium.

It must be remembered, that these observations have been extended to comparative anatomy, and have proved that the strictest analogy is maintained throughout all the creation. Where animals have propensities in common with Man, they have corresponding parts of the Brain. In future all the classes, orders, genera, species, and varieties of animals must be arranged according to the Brain and Nervous System.

SECTION II.

Of the History of the Discoveries.

The history of the discoveries of Gall is very interesting, and may be found in his large work. It tends to show that the organs, and their respective places, and the connection between them and the faculties were discovered entirely by accident. Dr. Gall does not appear to have projected any part of his system, like a theorist, but to have arrived at the general results, or the philosophy of the mind, in consequence of deductions from the multiplied observation of facts made by himself and his learned colleague, Dr. Spurzheim: a circumstance, which ought particularly to be remembered; because from the very natural arrangement of the organs, which in fact proves strongly the correctness of the theory, some persons might be induced to suspect that he had planned out a map of

the head, previously to discovering the real seats of the particular faculties.

For we shall see that the organs are grouped together according to the mutual relation of their functions. Thus the organ of Veneration is situated between Benevolence, Believingness, Determinateness and Righteousness. The organ of Amativeness close to that which causes us to protect our progeny, and so on, of others.

Dr. Gall first observed, when only a student, that many of his condisciples, who were inferior to himself in reflecting powers, nevertheless greatly excelled him in the memory of languages. Others in local memory and so forth. He then noticed a difference in the forms of their heads, and by repeating and extending his observations for many years, he discovered by degrees the particular prominences of parts which indicated the greater or less developement of the convolutions of the brain below them, and which thus became indices of the dif-

ferent faculties of the mind. These observations were daily extended by him and his colleague, and I have myself paid particular attention to this subject, and can say that none of us have ever found one single exception to the rules; that is, we have never found a strong faculty existing without its respective organ being marked on the scull. Our adversaries may say what they please against the truth of the system; but we shall constantly advert to these facts as living proofs of its correctness; and only request an opportunity of pointing out well marked cases to those who being sceptical are at the same time really desirous of obtaining information of the truth.

It has been said, that the facts are not new; and that the different forms which the ancients gave to the busts of gladiators, poets, philosophers, &c. show the antiquity of the doctrine. We admit this as a collateral proof. Thus the new discoveries which have been perfected, and have become a system, confirm the observations of the an-

cients, whose skill taught them to imitate from nature, forms of which no Philosophy had as yet shown them the cause.

SECTION III.

Of the Anatomical Structure of the Brain.

It would be impossible in these sheets to enter into the detail of the anatomical structure of the Brain: such an account would fill a large volume; I must be contented, therefore, to state a few of the leading facts, and to refer the professional reader for particulars to the large work published in France, entitled, “Anatomie et Physiologie du système nerveux en général et du Cerveau en particulier,” wherein will be found a very scientific developement of the hitherto unexplored structure of the Brain and Nerves.

Before the time of Gall, the minute Anatomy of the Brain was quite unknown. Anatomists set about the investigation of it in a manner which would never have led to any useful results. They made horizontal slices of this organ with the scalpel, and only mutilated its parts without displaying its structure. The very names given to the different parts of the organ, showed how very imperfect were their views of its structure and functions. They talked of the medullary or central mass, of the cortical covering, and used other terms equally erroneous. Gall and Spurzheim, by a method of dissection entirely new, have at length unfolded the parts of the Brain, and shown that its structure is fibrous, and that the manner of dissecting it caused former anatomists to mistake the middle parts for medullary substance. Indeed so erroneous were the views and descriptions of this organ, that anatomists have even compared its substance to boiled rice, to paste and to other inorganic masses. The new anatomy has not only shown the fibrous structure of the

Brain, but has proved the most exact uniformity of nature, in the structure of the Nervous Systems of animals throughout the creation. All nervous parts are constructed on a uniformity of principle, with varieties adapted to the peculiar function of each. The cineritious substance seems proved to be the instrument of production for the nervous fibre; the quantity of this substance about the origin of every nervous filament is commensurate to the body of the nerve, which issues therefrom. It is the nidus of the nerve; the same substance is found in the different ganglia which are the apparatus of increment. There is a proportion between every nerve, and the cineritious substance with which it is connected, either at its origin, or by its ganglia.

Every nerve, to use Dr. Spurzheim's words, exists for itself, and the assemblages of nervous fibres, which compose the brain, are produced, encreased, and exist in a manner similar to other nerves. And there is no determinate proportion observed be-

tween the parts of the Brain. The nervous fibres, which compose both the Cerebrum and Cerebellum, are divided into the diverging and the converging fibres. The former take their origin about that part usually called the medulla oblongata. They originate in the cineritious substance. The fibres which compose the intellectual organs, and are distributed eventually to the anterior parts of the Brain, arise in the anterior pyramids, and there decussate each other; a circumstance which explains the reason why apoplexy on the front part of the Brain affects the opposite side of the body. The fibres which compose the posterior parts, arise posteriorly in the medulla oblongata, and do not cross each other. The former have a ganglion of increase in the Pons Varolii or near the grand commissure of the Cerebellum. They pass through the corpora striata, and are eventually embedded in the cineritious covering of the Intellectual Organs,* which may be regarded as their

* I make this description imperfect, though not erro-

ultimate ganglion. The remaining fibres from the posterior parts of the medulla oblongata pass behind the commissure of the cerebellum, but not in the same manner. They pass into what was formerly regarded to be the thalami of the optic nerve, and are spent on the organs of the Sentiments and Propensities. The fibres of the Cerebellum originate also in the medulla oblongata. The commissures of the Brain, Corpus Callosum, &c. are the means of the converging fibres, whereby the parts of two hemispheres are brought into communication. I purposely avoid being particular in the anatomical description, as well in order that people may examine Dr. Spurzheim's work, as for want of room. The origin of the optic nerves from the anterior pair of the Corpora Quadrigemina, the office of the old thalamus as an apparatus of increase; and in general the total difference in the views of the nervous. For the professional student must examine for himself the large work, and also the brain in dissection.

Brain and nerves which this short observation must excite, will, I hope, invite and facilitate enquiry. The anatomical reader will of course remember, while I am speaking of the organs, that all the parts are double, there being two hemispheres, and that they are brought into communication.

I have heard that some professional persons, who are averse to the new doctrines, have even gone so far as to deny the correctness of some parts of the anatomical descriptions. I have examined them completely and repeatedly, both by a perusal of the large work of Drs. Gall and Spurzheim, and by corresponding dissections of the Brain; and I am convinced of their correctness. And I think that more may yet be done by the repeated investigations of future anatomists. I beg leave also to refer the reader to the collateral testimony of my friend Dr. Leach, Zoologist at the British Museum, in a familiar letter from him, which I shall insert at the end of this pamphlet. Avoiding, for reasons before assigned,

a minute account of the Anatomy of the Brain, I may advert, before I proceed to the consideration of the organs, to the circumstance, that before I ever heard of the discoveries of Dr. Gall, and while pursuing comparative Anatomy by dissection, I was much struck with the generic forms, if I may so express myself, of the heads of animals ; and though I knew not the reason why in particular genera certain parts of the Brain were most developed, being then unacquainted with the organology, I nevertheless felt persuaded, and used to say, that if the structure and functions of the Brain were properly known, they would become the basis of all systematic classifications of animated beings. While studying the Brain, and deploring how little minute anatomists had done towards a physiological history of the mind and its faculties, founded on the anatomy of the Brain ; and hearing the futility of the enquiry so often descanted on in lectures, I was not aware that at this very time a beautiful dissection of the structure of the

Brain was made in Germany, and preparing for publication in France.

SECTION IV.

Of the material organs of the manifestations of the mind.

THE Brain has always been regarded as the organ of the mind. And the ancient opinions respecting this organ, which were drawn from conjecture and analogy, differ from those which Gall and Spurzheim have drawn from Anatomy and experience, inasmuch as the latter regard it not as one simple organ, but as an assemblage of different organs, which are the material instruments of the various manifestations of the mind. There is no proportion between

these organs. They vary in size, in activity, and in mutual influences in different individuals. And the diversity of organization, combined with the influence of education, constitutes the innumerable varieties of character both of men and of animals. They are divided into 1. the organs of the Propensities; 2. those of the Sentiments; 3. those of the Knowing Intellectual Faculties; and 4. those of the Reflecting Intellectual Faculties. Subdivisions may still be made.

OF
Gemüth,

OR L'AME:
DIVIDED INTO PROPENSITIES AND
SENTIMENTS.

OF THE PROPENSITIES.

I. *The Organ of Amativeness.*

Next to nutrition for the support of the individual, generation for the preservation of the species becomes the most important function in the animal oeconomy; consequently we find a very large and well secured organ appointed by Nature to give this propensity, and to incite the sexes thereby to propagate their kind, and to multiply themselves on the earth. The Cere-
Cran. C

bellum or little brain is the organ of this propensity, and its great size in proportion to the other organs is a fact quite conformable to an acknowledged law of physiology, namely, that the larger organs are appropriated to the more important functions of the animal system. This organ causes erotic desires in general, and excites the generative apparatus to the performance of its ultimate functions.

Dr. Gall first discovered that the Cerebellum was the organ of this propensity by accident. He noticed its great size in a woman whose amorous character was well known. He multiplied his observations on a very extensive scale, and constantly found the size of this part to agree with the strength of the propensity. In general, the male of all animals has this organ larger than the female. We consider no truth in natural history more fully established than that the Cerebellum is the organ of this propensity. It is founded on the most extensive examination of facts both in men and animals. The reader may consult Dr.

Spurzheim's large work. Among the many collateral proofs which we have received of the place and destination of this organ, I shall mention only a few, as we insist on the fact of the constant correspondence between its size and the character of the individual as the most positive proof of our correctness in regarding them as cause and effect. Among other collateral proofs it may be mentioned, that wounds in the occiput and in the hinder part of the neck have caused either a partial suspension of the erotic functions in some persons, and in others, an excitement attended with circumstances of preternatural violence. Hippocrates mentions the paralyzing effects of wounds on the occiput on the organs of generation.

The ancients, long before the particular seats of the organs of the brain were known, had some imperfect notion of the relation between this part and the erotic propensity. Virgil commends the bull, *Cui plurima cervix* :¹ and Apollonius Rhodius represents

¹ Virg. Georg. lib. iii.

Medea as suffering a violent pain in the back of her neck, in consequence of her love for Jason.¹

The most rapid developement of this organ is about the age of puberty. The beard grows, the voice alters, and the cerebellum enlarges.²

II. *Organ of Philoprogenitiveness.*

We find that the organs are placed in a certain local relation to each other, accord-

¹ Apoll. Rhod.

Catullus remarks :

“ Non illum nutrix orienti luce revisens
Hesterno collum potuit circumdare filo.”

² Columbæ aliæque aves, ante coitum, fœminarum colla infra occiput mordere solent, quasi copulandi cupidinem incitarent. Dum canes catuliunt, ipsorum colla insolito tepore tumescunt. Plurima facta hujusce generis narrare possumus, ad statuendam hujus organi existentiam. Sed ad Spurzheim. Phys. Syst. referre volumus.

ing to the mutual influence of their functions. Thus the organ which makes us love and protect our offspring is situated just above that of physical love, which causes us to produce them.

This organ, when large, gives a full and prominent occiput: it is larger in female than in male animals, and consequently in women than in men, and gives the greater degree of horizontal length in proportion to breadth and vertical depth, which the female head has with respect to the male in the human subject. There are exceptions to every rule; I know men who have this organ larger than the generality of women, and who manifest the greatest propensity to associate with and protect infants. I have among my collection of skulls one with this organ very remarkably developed.

This organ is defective in the cuckoo, and in other animals to whom Nature has not appointed the office of rearing the

progeny. It is possible in general to distinguish the heads of males from those of females, by the comparative bigness of this organ in the latter. Children have this organ in general more developed than grown persons. I do not know why this is, except it be that Nature intended in large families that the larger offspring should protect the smaller, instead of oppressing them, which pride and selfishness might cause them to do, and that they should thus cooperate with the mother in the protection and care of the family.

Some very important observations with respect to this organ are made by Gall and Spurzheim, to which I refer the reader.¹ When the organs of this propensity are rather farther asunder than usual, they may, like other organs, cause the indicative prominence to appear double.²

¹ Anat. and Phys. du Syst. &c. 2d vol.

² The Greeks were aware of the distinct nature of Philoprogenitiveness, and called it Στόργη.

III. *The Organ of Inhabitiveness*

Is above the former, and below the organ of Haughtiness. Its destiny seems to be that of giving to animals a propensity to attach themselves to particular local situations. Examine the head of the chamois which lives on the mountains ; the mountain hare, &c. ; and compare them as to this part with the hare of low countries, and other animals which inhabit various situations indifferently. A curious and authentic story is related by Spurzheim, of the difference of rats in this particular, which inhabit the cellars, from those which were found to resort to the elevated parts of the house. This faculty is not very active in the human subject.

IV. *Organ of Adhesiveness.*

Situated on each side of that of inhabitiveness, and gives a fullness to the lateral pos-

terior part of the head, produces the propensity to attach ourselves to persons, animals, and I think other objects. It is, therefore, the cause of friendship, moral love, and attachment of all kinds: there are probably several different affections of this organ. Whether or no the different affections of organs are produced by means of the same fibres, has not been yet determined. Dogs have this organ often in a considerable degree. Combined with the organ of firmness and benevolence, it makes a sincere friend; combined with amateness and ideality, a romantic lover. Refer to the observations on characters. The general character may be said to be the result of the different contending faculties; it is to physiology, what the resolution of motion is to mechanics; the difference of all the disturbing forces.

V. *Organ of Combativeness.*

We cannot doubt that there is a natural propensity to fight: not only all persons,

more or less, have this disposition when insulted and provoked, but almost all animals. Its external sign is a prominence of the occiput behind the ears, on each side philoprogenitiveness, and below adhesiveness; we must not mistake the mastoid process for the organ. This organ is the seat of anger and pugnacity. But the character of the person is the result of the mutual influences described below. The abuses of this organ contribute essentially to the constant state of warfare, which from time immemorial has drenched the earth with blood.

VI. *Organ of Destructiveness.*

This has been wrongly termed organ of murder, which crime is in reality only one of the abuses of the faculty. The primitive function of this organ is to give a propensity to destroy in general, while accidental circumstances determine the object to be destroyed; and the mutual influences of

other organs modify the propensity, which in some persons is naturally extremely strong and active. I have known some persons, even females, who have taken delight in destroying small animals, from the great size of this organ. Its seat is just above the ears, and it gives a prominence to the middle part of the temporal bone in the human subject, but is more behind the ears in animals. In the carnivora it is more developed than in the herbivora. In the feline kind, which spring on their prey from out of ambush, the great developement of this organ together with that of secretiveness, which is another essential part of their character, produces that fulness and width about the ears, which characterizes at once the whole genus. The hair too grows long about this part, as if nature had purposely marked out the disposition by an external sign too obvious to be mistaken. Observe the lion, the tyger, the cat, and particularly the lynx and caracal; and compare them with the sheep, the goat, and the hare, in this particular.

VII. *The Organ of Constructiveness.*

The propensity to build, to construct machines, &c. which is a primitive faculty, is marked on the outside by a fulness behind the external angle of the orbit, a little towards the temples. I refer the curious reader to the very interesting facts relative to this organ, related by Spurzheim in his lectures. By means of it are revealed to the geniuses in architecture and construction, the useful arts for civilization. The mutual influences of other faculties, which contribute to the character in this as in other cases, determine and modify the activity of this organ. Compare the difference of its effects on a large scale, by reviewing the majestic architecture of Greece and Rome; the religious gloom of the Gothic Cathedral; the massy pyramids of Egypt; the simple huts of the wild Indian; the gable-ended houses of Amsterdam; the stone monuments of the ancient Britons;

the mosques of Constantinople ; and the whimsical configurations of the temples and pagodas of China. To this organ, subject to numerous mutual influences, we are indebted for all the useful instruments of music, of agriculture, and of astronomy ; sciences, whereby we gratify and extend the functions of other organs ; compose concerts of musical instruments, till the earth, and penetrate into remote space with telescopes, and contemplate the position and movements of the celestial bodies. Important, indeed, then to society is this organ, whose activity we may trace through all the costumes of the world, and through every building from the hut of a savage to the Temple of Solomon ; from the Monument by London Bridge to the beautifully painted Porcelain Tower at Nankin. The beaver builds its hut and birds their nests because of this organ, and it is the cause of all construction whatever,

VIII. *Organ of Covetiveness,*

Above and more hindward than the last, gives the propensity to appropriate, to have of one's own. It is necessary to the aggrandisement and protection of property; but its abuses are robbery, envy, and a miserly disposition. In some persons the propensity to steal is almost incontrollable: when combined with amateness, jealousy is the result. This organ is the cause why we are obliged to pay watchmen to be walking about all night, to prevent the incursions of our neighbours. Animals which collect grain, &c. have this organ much developed. Dogs seem certainly to have a positive feeling of property: they protect their master's house, and their own bone with courage and determination.

IX. *Organ of Secretiveness.*

The propensity to concealment seems, like all the others, to be in some measure necessary to the nature of man and of many animals. And, like others, the most odious characters are produced from its abuses ; when, to a naturally great developement of the organ, the mutual influence of counteracting sentiments of a superior order is wanting. The abuses of this organ are lying, slyness, and duplicity of character. Its external sign is a fulness of that part of the parietal bone, above destructiveness and behind covetiveness. I observed, among a great number of the North Welsh, very little developement of this organ, or of covetiveness, while their superior sentiments were much developed. Compare, in animals, foxes and all those who conceal much by nature, with those who do not in respect to this organ.

OF THE SENTIMENTS.

THE sentiments are a different sort of faculty from mere propensities, and hold a higher rank both physically and virtually in the scale of faculties.

X. *Organ of Haughtiness.*

Self-love and pride distinguish some persons; these have the part of the head, above Inhabitiveness and behind Determinativeness, much developed. Gall identified this faculty with inhabitiveness, from the tendency of the latter to carry animals by choice into lofty places; but Spurzheim differs from him on very solid grounds. See the Physiognomical System of the latter. He thinks that this faculty is pos-

sessed by the turkey, the peacock, the horse and some other animals. I can discover myself in the horse no elevation sufficient to demonstrate distinctly this faculty; but I yield to Spurzheim's superior knowledge and experience in these matters. The faculty is of itself unamiable, and pityable are the victims of its too great development. But I have observed that many persons are vulgarly accused of this sentiment, who in reality have only philapprobateness in a great degree.

XI. *Organ of Philapprobateness.*

The desire to be approved of by others is a quality of mind very desirable, in a certain degree: it contributes to make us polite, cleanly and social, and is a great stimulus to exertion. Its different affections are ambition as in heroes, love of ornament as in many females, and in gene-

ral gives a feeling of liking to be approved. Its abuses are—vanity; influenced by haughtiness, conceit. With Ideality, Imitativeness, and Secretiveness, it causes affectation. More men are proud and more women vain. And these characteristics are preserved in the mental insanities of male and of female maniacs.

XII. *Organ of Cautiousness*

Makes circumspection and fear of all kinds: it is very useful in a certain degree. Its external sign is a largeness of the lateral and posterior part of the head, above and behind secretiveness and laterally below righteousness. Stags, weasels, and some other animals, have this propensity much marked. This organ and that of courage or combativeness are quite compatible. A man may have the propensity to be courageous, and may have also a sentiment of cautiousness to temper and regulate his temerity. Timidity and terror are its abuses. When it acts too suddenly, we start.

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XIII. *Organ of Benevolence.*

Benevolence and meekness are the result of that part of the brain which, when large, causes an elevation in the middle upper part of the forehead, just where the hair usually begins. This faculty disposes to benevolent actions. Where persons really have it, their compassion always extends to animals. I have found that where this was not the case the organ did not exist in a great degree, and their benevolent pretensions were much to be suspected.

XIV. *Organ of Veneration.*

It was observed that persons, in whom the middle upper part of the head, behind the organ of Benevolence, and before that

of Determinateness, was much developed, were more disposed for veneration, and appeared to have a stronger sentiment of religion than other persons. Professed atheists, on the contrary, have manifested a want of this organ; many had quite a hollow in the place of the organ. Some persons have objected to a material organ for this propensity, and have said that in admitting it we make religion quite a material feeling, and destroy the merit thereof. We think, on the contrary, that the establishment of an organ, and the consequent inference of a special faculty of veneration, shows that it is an essential function in the nature of man. The Deity in enjoining worship must have given also a power and a disposition for it. Revealed religion may determine the object and form of worship, but the primitive faculty of veneration must exist in our nature. Thus we see in savage countries, where neither the Christian nor Mohammedan religion are taught, that this faculty is directed towards various imaginary and absurd deities. I refer for the answer to objections

to a book, *Sur les dispositions innées de l'Ame et l'Esprit*, by Gall and Spurzheim.

XV. *Organ of Believingness.*

Dr. Gall formerly regarded hope and faith as affections of several organs. Dr. Spurzheim regards this faculty as separate, and to have an organ on each side of Veneration. Abundant proofs have established the fact. I have called this the organ of Believingness, because hope is used in different senses, and is not the only or the primitive faculty. We must not confound, however, believingness or the disposition to believe, to trust, to have faith, with the philosophical belief. Belief, about which J. H. Tooke was to have published another quarto, seems to me to come of Individuality and Comparison. Credulity is one abuse of this organ.

XVI. *Organ of Ideality.*

When the temples are large in the part above Constructiveness and Covetiveness, and before and higher than Secretiveness, that peculiar feeling of enthusiasm and wildness attendant on imagination exists, which constitutes the essential character of a poet, *qui nascitur, non fit*, as the proverb says. This organ gives a peculiar energy and coloring to the feelings, which can be better felt by those who have it strong, than described on paper. According to other mutual influences this organ has different effects on different persons, in the production of character. Examine Milton, Shakspeare, the ancient busts of Homer and Virgil, and, in short, poets and men of imagination in general. This organ also contributes to fanciful and whimsical characters, which accounts for the frequent eccentricity of men of genius.

Among the desiderata of the physiology of the organs may be reckoned, the cause why the recollection of past scenes, particularly the recurrence to the scenes of infancy, produce in many persons such vivid and such peculiar sensations as they appear to do. We do not at present know the reason of this ; but I think I have observed, that in many persons who speak of having these feelings in a high degree, the organs of Ideality and of Adhesiveness are much developed. Indeed, on whatever principle this pleasing and indescribable feeling depends which attends the recurrence to early ideas, it would be heightened by Ideality. I do not know whether all persons have this feeling, different persons certainly have it in a very different degree, and it is felt much more in certain states of nervous irritability, than when we are in perfect health. What has been called the *Maladie du Pays* of the Swiss, which is certainly Adhesiveness, is a feeling of the kind I allude to. I may refer likewise to a paper of Addison in the *Spectator*, and to seve-

ral passages in the poets,¹ wherein this feeling is alluded to. It seems to be a sentiment connected with a recurrent train of early association of ideas. The feeling is peculiar, and is more or less tinged with the poetical melancholy and pensiveness. I have been conscious of this feeling, when, during travelling, any accidental circumstance has suddenly and unexpectedly called to my memory the scenes of distant home, or of early childhood. The tendency it gives to composition and romantic poetry, is one of the reasons why I ascribe it partly to Ideality; as well as because it is often accompanied, when violent, with a sensation on that part of the head, where this organ is seated. But Adhesiveness enters into combination with it in the production of this feeling.

¹ “Non e il mio nido,” (says the poet) “ove nodrito fui sì dolcemente,” &c. Refe also to a passage of Virgil in the Eclogue of Gallus, where this feeling seems to make up one of the associations of love: beginning *Saepibus in nostris parvam te, roscida mala*, &c.

Organ of Mysterizingness.

When the part of the brain between Ideality and Imitativeness is much developed, persons are much disposed to be superstitious, to have visions, to believe in ghosts, astrology, &c. Dr. Spurzheim does not determine whether this is a particular organ, or only a greater developement of Ideality, or Hope, or of both. This leads to a common query—What makes a distinct organ? The developement of this part gives these faculties above stated, and inclines to mysticism. This organ has made the funereal bubo, the ominous owl, and the doctrine of sorcery and supernatural prognostications. I think, even in Ideality, the functions vary according as the foremore or hindermore part of that organ is developed; when the forepart of it is most developed, the intellectual functions,—when the hindermore part, the sentiments have, I think, more mutual influence with it. I submit the propriety of the name mysterizingness, because it makes people mysterize, and interpret omens.

XVII. *Organ of Righteousness.*

This produces the sentiments of just and unjust; a sentiment quite different from that of Benevolence. It is also regarded as of a higher order by the people in general. We have a proverb, Be just before you are generous. Its external sign is on each side of Determinativeness. It is the cause of conscientiousness.

XVIII. *Organ of Determinativeness,*

Before Haughtiness and behind Veneration, gives that character of mind, which when exerted in a good cause we call perseverance, and when in a bad one obstinacy. It seems placed in the midst of the feelings to strengthen their activity.

INTELLECTUAL FACULTIES,

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THE Intellectual Faculties are divided into those whereby we know the external bodies and their qualities, and those whereby we compare and reflect on them and on our other faculties.

3. KNOWING FACULTIES.

XIX. *Organ of Individuality.*

Situated in the middle and inferior part of the forehead just above the nose, between

the organs of Space, &c. This faculty is necessary to the knowledge of the external world. It knows objects in their individual capacity. Persons endowed with it in a great degree have a good memory of facts. This organ observes also the faculties of the other organs, individualizes objects of sense and causes us, I think, to regard the impressions which the external bodies make on the five senses to come from one object. This organ is curious to know facts, and therefore excites the other organs of the knowing faculties and the five senses into their active state. I have also conceived some other and very interesting functions of this organ, which however I shall not state, but wait to see if enquiring and reflective persons discover them; and shall be interested to compare their remarks with my present conceptions, as from time to time, this system becomes more known.

I must, however, advert to the falsehood of a popular opinion concerning the functions of the five external senses. Many

persons contend that by these alone we acquire our knowledge of the existence of external bodies. Various facts and observations have, however, established it as certain that this is not the real case. Some persons have contended that belief in external existence is a simple act of the mind, by which we refer the impression on our organs of sense to bodies existing in the external world. The celebrated metaphysician Bishop Berkeley has, as it is well known, written a very ingenious treatise on this subject, by which he endeavours to show that we have no proof of the existence of matter, by the sensation of its primary, any more than we have by the sensation of its secondary, qualities. Mr. Fearne has of late, in a pamphlet in the Pamphleteer, No. IX. given his opinion that it is by intellect and not by sensation that we have the external perception of bodies.

We admit that the five senses do not produce belief in the existence of the external world. They are only instruments

adapted to receive the impressions of the qualities of external bodies, but our conception of their individual existence is certainly another sort of function of the mind. But it is a function which depends likewise on material conditions. And we admit the Organ of Individuality to be the organic apparatus which performs this function. This organ desires to know, and excites the activity of the organs of sense, receives their impressions, and individualises the object which communicates its qualities by means of the five senses and the other intellectual organs. I was formerly inclined to regard the compatibility of single consciousness with the duplicity of the organs as depending on the Organ of Individuality. There are some reasons for regarding the commissures of the brain to be the cause of single consciousness. It seems also possible that it may arise from the active state of the two hemispheres of the Brain not taking place at once. I do not, however, believe this to be the case. I think that single consciousness is an effect either of

the commissures, or that it is produced by some other cause not yet known. Of late I have been rather inclined to the latter opinion. The reason which once induced me to regard Individuality as the cause of the single consciousness we had of objects was, that it appeared to me that though the commissures might cause us to conceive as single, qualities of any object conceived by two corresponding organs, one in either hemisphere, that nevertheless Individuality and not the commissures must be the cause of our attributing to single and individual objects, qualities impressed on different senses, and known by different organs. In short, there appeared to me to be some similarity in the function by which we individualised objects acting on double organs, and that by which we attributed to individual objects impressions made not only on double but on different organs.

I state this merely as the operation my mind went through before, from repeated reflections, I arrived at my present conceptions of the operations of intellect, because

I conceive that what occurs to one person may possibly occur to some other, who may be assisted by observing the progress of thought in other persons ; to Dr. Spurzheim, who rectified many of my imperfect views of these subjects, and who has thought longer thereon, I refer the metaphysical reader ; as he has recently made, in my opinion, the most philosophical arrangement of the mutual influence of Individuality in the other Knowing Faculties, founded on an accurate observance of the connexion between the juxtaposition of the organs and the order of thought, with respect to our knowledge of bodies. The Lectures he is now giving contain a most beautiful illustration of the physiology of this arrangement of organs.

XX. *Organ of Form.*

Next to perceiving the existence of external bodies, the quality which most immediately strikes us, is their figure. This conception of the form of bodies is quite distinct from that of their other qualities, and depends on the activity of a particular organ. The great development of this organ gives a peculiar look to the eyes, whereby we can readily distinguish if a person is endowed with this faculty in a high degree.

XXI. *Organ of Size.*

There must be an organ of size, but the place has not been completely established, except by reasoning from analogy. I have not seen cases whereby to confirm the sus-

picion I entertain that the place Dr. Spurzheim has given to this organ is correct.

XXII. *Organ of Weight.*

The conception of the weight resulting from the solid substance of bodies is yet another operation of the mind with respect to them; and it must depend on the activity of a particular organ. The place is not precisely known at present. I know a person who has peculiar pleasure in Mechanics in considering different momenta; and whose constant question is, what is the weight of such and such a body? His eye has a peculiar expression. I cannot assert any thing positively with respect to this organ at present: nor has Spurzheim ascertained exactly its place.

XXIII. *Organ of Colour.*

The eye perceives the impression of light in different degrees of strength, and makes us acquainted with visible objects, but the conception of the relations of colour is an intellectual operation, performed by a particular organ. There are many persons who can see, who cannot distinguish different colours from each other, and who are found defective in this organ. If a person merely misnamed colours, we should have no proof that he did not see them like other people, and the error of nomination might be an error of language. Neither have we any proof that where persons nominate colours the same, they do not in reality see them somewhat differently. But where persons do not distinguish between two decidedly different colours, we are sure that there must be a defect of that power of the mind, whereby it distinguishes different

tints ; and we find, conformably to this view of the subject, that the organ of colour is defective in such persons.

In persons in whom the organ is strongly developed, the eyebrow appears more arched in the middle than usual. Celebrated painters, particularly landscape painters, who are notorious for fine colouring, have this arched eyebrow, indicating the organ to be developed in a high degree.

XXIV. *Organ of Space.*

The conception of space, and of the mutual position of bodies depend on a particular organ. An elevation above the nose, over the frontal sinus, and extending upward and outward in the forehead, is the external sign of its greater developement. Persons

in whom this organ is large, often become good geographers, and sometimes manifest a great desire to travel. Migratory animals, particularly the swallow, are endowed with a high degree of development of this organ, and it appears to give them the instinct to change their local habitation. There may be a periodical activity of this organ, which determines the time of their migrations.

XXV. *Organ of Order,*

Situated between the organ of number and colour, produces arrangement, and disposes persons to tidiness and order. Cleanliness seems also to be the result of this faculty. The great want of it contributes to slovenliness and unthriftyhood.

XXVI. *Organ of Time.*

Vain attempts have been made by metaphysicians to define time. Some have considered that we know it only by the succession of phenomena, which take place in it. We regard it as a primitive conception of the mind ; like all other simple ideas, it is indefinable. And we believe that it depends on a particular organ situated near to and more outward than Individuality. It acts contemporaneously with order, when we contemplate the chronological succession of events. I think we endeavour by its overstrained activity to conceive eternal duration. In like manner, I think we endeavour with the organ of space to conceive infinite extension. To neither of these we know any bounds : but the limited sphere of the activity of our organs, prevents, in my opinion, our arriving at the conception we aim at, which Individuality

makes us endeavour to attain, by exciting the activity of the respective Organ of Time and Space. This is a conception of my own, when I have reflected on what has frequently passed in my mind. I think it is the Organ of Time whereby we count the bars in music, or beat time with a drum; while the Organ of Tune makes us play harmoniously and in concord. Some persons have one of these faculties without the other, and consequently they are only partial musicians.

XXVII. *Organ of Number.*

This is the faculty by which we count. It exists in very different degrees in different persons, and constitutes the essential faculty for arithmetic and analytical mathematics. Jedediah Buxton, Colburn the calculating boy, Sir Isaac Newton, La Place, D'Alembert, and other great mathematicians, were

found endowed with this organ in a high degree. Its external sign is a fulness and downward inclination of the external angle of the orbit and the eyebrow. Animals seem endowed, in a weak degree, with this propensity. Magpies have been said only to count three. Refer to Spurzheim's large work.

XXVIII. *Organ of Tune.*

It is not the acuteness of the ear, which gives the science of music. The relations of tone and the laws of harmony are the result of a special faculty, which is vulgarly termed an ear for music, and it is marked by an angular elevation extending upward above the eyebrow, between the Organ of Colour and that of Number. The eyebrow seems somewhat pulled up in this place, so that where the respective organs are in any degree insulated, the eyebrow of the musician is easily distinguished from that of a painter or of a mathemati-

cian. Nightingales are more endowed with this organ than sparrows. Investigations of comparative anatomy have established the strictest analogy in the distribution of the corresponding organs, throughout all known orders of animal beings. But comparative anatomists, in general, have hitherto been inattentive to the minute structure of the Brain; in consequence whereof, many have denied facts which the new anatomists of the Brain are capable of demonstrating.

XXIX. *Organ of Language.*

This organ gives two external forms, which seem to correspond with two different functions of the organ. We do not know, at present, whether these two functions are performed by different parts of the organ, or whether they only result from different affections of the same fibres. The external mark of a great memory of words is indicated by a

full and prominent eye, whereas those who are fond of the spirit of languages have often the eye somewhat pressed downwards. Both these functions may exist together, and give the eye a compound form. Some persons have this organ in a remarkable degree: and the celebrated John Horne Tooke is given by Spurzheim as a specimen of the great developement of that sign which corresponds to the faculty of philology, or brilliant conceptions of the spirit of language. The established connexion between arbitrary signs and ideas has made some persons erroneously imagine that we always think and reason by means of words, which is certainly an error. It is also an error to suppose with Tooke that words are all nouns and verbs. All words may, perhaps, be reduced to nouns and verbs, because Individuality and the Knowing Faculties were more early active than Comparison and consequently reflection. Thus all words may be traced to their etymology; but particles and some other words

have subsequently acquired a different signification. Thus we see how the etymological researches of Horne Tooke may not be altogether contradictory to the opinions of reflecting persons, who have opposed his doctrine on the strength of their own reflection on what passed in their own minds in reasoning. I confess myself to have been formerly misled by the arguments of Horne Tooke; but I have been convinced by Spurzheim, and the subsequent reflections which he has excited, of the truth of the above statement, with respect to the functions of language. The words which, though they have originally been formed from nouns and verbs, do not now represent them, are in fact significant representatives of other faculties of the mind, and not of those by which we know external bodies. This subject may at first appear obscure, but is worthy the attentive consideration of the philologist.

4. THE REFLECTING FACULTIES.

After we have known the external world by the knowing faculties, and believed in the existence of external objects by that of Individuality, we compare them, reflecting on their similitudes and dissimilitudes, and regard them in the light of cause and effect by an organic apparatus of a superiour order.

XXX. *The Organ of Comparison*

Is marked by an elevation in the middle of the forehead, above the organ of Individuality, and below Benevolence. It is the faculty by which we make all comparisons. With this faculty we can identify objects; but I have always conceived that to absolute identity, the function of Indi-

viduality is also a necessary adjunct. We perceive by comparison of the appearance of an object with the remembrance of it, that it is identically the same: but Individuality then acts to make us conceive its identical and individual existence. I feel this in my own mind, and that feeling is the strongest of proofs to which I can aspire. The Organ of Comparison is the cause of analogies, and makes us delight in metaphors and similies in language. When it exists in a very high degree, it causes the common conversation of the person endowed with it to be superabundantly figurative. It is an essential ingredient in the Will, hereafter to be spoken of.

XXXI. *Organ of Causality.*

Mr. Hume has asserted that we know nothing of cause and effect, but by an observance of the uniform conjunction of

Phenomena. We admit that the regular succession of Phenomena suggests the notions that they are connected by catenation of causes ; by exciting a particular faculty ; but the conception of causation thus excited is the result of a particular organ ; we have some reason to believe, that this is wanting in animals. It is marked on the human forehead by a fulness on each side of the organ of comparison. This organ, says Dr. Spurzheim, asks Why? It produces Inquisitiveness into causes, and is a necessary ingredient in the character of a philosopher.

XXXII. *Organ of Wit*

Is a faculty perceiving a different sort of relation than those which are observed by the organ of Comparison ; in short, witty relations. Observe the heads of Sterne, Voltaire, and others possessed of this faculty. Indeed, in Sterne, as he is usually drawn, his finger points directly to this his

strongest organ. It is situated more outward than the organ of Causality.

The reflecting organs which constitute the true philosophic character; and combined with the knowing faculties, when developed in a high degree, make an intellectual mind.—A developement of reflecting powers is absolutely necessary to real greatness.

XXXIII. *Organ of Imitativeness.*

The power of Mimicry or Imitation, which is possessed in so high a degree by some persons, as for instance, by Shakspeare, and which is necessary for theatrical performers in general, is of a peculiar nature, and is marked by a prominency of the head on each side, between Benevolence and the Mysticizingness. Spurzheim calls this a faculty sui generis. I think I have observed that Mimicry may be divided into voluntary and involuntary. Some persons are con-

tinually imitating the manners of those whom they are amongst, who nevertheless do not possess the power of voluntary imitation, or theatrical mimicry.

SECTION V.

OF THE NATURAL LANGUAGE,

OR

Physiognomical Expression of the Organs.

The popular belief in certain physiognomical expressions, and the rules of judging, laid down by Lavater, whereon many persons rely, and which have some foundation on true observation, render desirable a few remarks on the gestures of the body and movements of the muscles of the face,

which correspond to the activity of the particular organs. Always corresponding to the actions of the organs, these external expressions must be compounded where several organs act simultaneously. I shall merely advert to the external expressions. Those who wish an intimate acquaintance with them, must study Nature, and may learn the rules by an attendance on Spurzheim's Lectures. They are perceivable, more or less, in all persons and all animals; they constitute the characteristic gesticulations of nations and tribes, and contribute principally to the peculiar expressions of the countenance and of the muscular movements of individuals. Thus, to be brief—for the expression of the organs of Physical Love or Amativeness, I may refer to the backward, reclining, or recumbent, position, produced by the activity of this faculty.¹—Consult the gestures of a

¹ Multi, qui maximum amoris organum habent, quibus prodiga Venus et incompressus copulandi amor, cum exhausti amore et effaeti sunt, jacere solent supinum, pondere pectori superimposito, ut occiput compressum esset pro resuscitatione cupidinis.

female nursing a child, for the expression of Philoprogenitiveness. Observe the motions excited by Adhesiveness on the meeting of two friends; the shake of the hand; and other modes of attachment. Compare the contracted features and knitted brow of Combativeness in boxers, with the open features of Cautiousness, when excited by formidable objects; mark the upright walk of Destructiveness, the eye of Secretiveness, when squint suspicion looks aslant. This is still different from the expression of Covetiveness. Nobody can mistake the mild look of Benevolence, the upward inclination of the eyes in religious Veneration, which makes even the savage regard God as above him. Who has not observed the characteristics of Determinateness, or the look of Hope, emphatically painted by Sir Joshua Reynolds? The Intellectual faculties have also a peculiar expression. Do we not shut and press the eyes to remember names?—Does not an arithmetician move his eyes outward, and his head, backward and forward in calcu-

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lation?—Does not poetical fancy throw the eyes outward and upward? People wag the head backwards and forwards in a peculiar manner, in hearing musical tones and merry tunes. Observe a remarkable example in the Pandians at Vauxhall. Does not Sterne put his finger on the organ of wit?—In short, there is an expression corresponding to the activity of every organ, to which the eyes are often turned when it is in action, and which we frequently stimulate into action, by the external application of the fingers, and whose activity we denote by the manner of holding the head. Vain would be the attempt to describe on paper this accurate natural language. The curious inquirer must attend to Nature for himself; but Dr. Spurzheim's Lectures, where he speaks of Expression, must be a fund of entertainment to those who are fond of physiognomy.

Thus has been determined in some measure by the physiologist of the brain, the relation between physiognomy or the external expression of the muscles, and the

place and physiology of the organs. Thus, therefore, has been reduced to definitive principles, founded on physiological and anatomical investigation, what Lavater was incapable of determining from observation on manners alone; but of which he had a sufficient glimpse to form for himself, in many cases, a tolerably just notion of persons.

It must be remembered, that, excepting idiots, all the organs are in some degree possessed by all persons. They are useful, and constitute the nature of Man. It is irregularity in the comparative development, which leads to abuses, and requires the influence of morality, and the coercion of law. The organs may all be exercised by education, which makes this an important function of Man, regarded as a social being. They may be separately or generally disordered; hence the influence of a knowledge of them in the treatment of insanity. Lastly, Punishment must be adapted to the particular wants and dispositions of individual culprits; hence what

important improvements the correction of miscreants may derive from such an intimate knowledge of character as this system leads to. These must become separate considerations.

SECTION VI.

Of the Application of the new Zoonomy to Education, founded on the Supremacy of the Will.

In the foregoing sketch of the discoveries of Gall and Spurzheim, respecting the brain, I have ventured to affirm positively, that the anatomy of that organ given by them is correct ; because I have not only seen it demonstrated by Spurzheim, but have dis-

sected it myself after their peculiar way, and my dissections have corresponded with those of these industrious anatomists.

With respect to the places and functions of the organs, the test of time and long experience alone can fully establish to the public the truth of these peculiar opinions. For my own part, I have not yet met with a case of exception to the rules, though I have been active in pursuing this science for a long time past. With a view, however, to encourage persons in the investigation of these interesting facts, I shall conclude this brief account with an examination of some of the most useful results of such an accurate criterion of natural character as it tends to establish.

One of the most important consequences of the establishment of these physiognomical rules will be its influence on the education of youth. Education may be divided into physical, or that which regards the bodily fabric; and moral, or that which ap-

pertains to the cultivation of the character. With regard to physical education, I must observe, that it is much neglected in general. The organs of the mind, like all other parts of the animal fabric, are nourished by the digestive processes, and often fall sick or strengthen with the rest of the body. Though there may be a few exceptions in certain specific diseases, yet in general the *mens sana* must ever be *in corpore sano*. The greatest care should therefore be taken that young persons be temperate, and in the constant habits of exercise in the open air. I believe that one reason why geniuses who spring up from the common people, and make their way into the literary and scientific world, so often exceed others in mental attainments, to be, because from their early habit of bodily activity the organs acquire a strong and active constitutional character.

Moral education may be considered in a twofold capacity:—1. That of exercising the intellectual faculties; and 2. That of

regulating the moral character. They both proceed on the supposition that Man has a Will to control his propensities and other faculties; and that his Will is influenced by motives. We admit a Will regulated by motives; and deny that the propensities are necessary and incontrollable. As all the faculties of the mind have organs, it may be asked, what are the organs of the Will? The organ of Individuality, which knows things, and regards them in their individual capacity; the organ of Comparison, which compares them, and gives, therefore, a choice; and the organ of Causality, which perceives the relation of cause and effect, produce a will, observe, compare, and control the other faculties, and influence the instruments of voluntary motion.¹ I have called these three organs the Board of Control. When the organ of Righteousness is the dictator, and it dictates

¹ These organs know and compare, and therefore give the choice for the volition.

acquire supremacy in counselling the Will, a moral conscience is established.

To return to Education. The application of the Physiology of the Brain to the education of youth, comprising the cultivation of the intellect, and regulation of the moral character, is founded on the proof we have already obtained from experience, that we can ascertain from the external form of the head, the relative developement of the different material conditions of the faculties, which will enable us to apply an education suitable to the peculiar wants of the individual.

I. With regard to the intellect. Education consists in exercising the faculties. Phrenology, by pointing out the strongest faculties of individuals, will assist us in choosing professions for youth agreeable to their particular genius ; and teach us, 1st, to cultivate those faculties, in the exercise whereof he is likely to become eminent : or, 2dly, to give additional excitement to those which, though naturally weak, may

be roused into comparative exertion by the excitements offered by education.

II. With regard to the moral character. In education we shall be enabled by learning the indications to see where, from a preponderance of some particular faculty, there is greater necessity for a counteraction by the excitement of the antagonist faculties. We learn also how the superiour sentiments ought to control the lower propensities; and how the organs of the Will should in all cases be exercised early, to give them the greatest range of power over the propensities.

We learn also another important branch of education in observing, that to strengthen and render habitual any good feeling, as Benevolence for instance, we must not only inculcate it, but must expose the child to objects of charity, and enhance it by setting before him instances of compassion. The same applies to all other faculties we wish to strengthen; we must call them into action by means of their proper objects. Thus Zoonomy comprises the sentiment which the

wise have held in all ages, of the inefficacy of precept when compared with example, as an incentive to moral excellence.

How much genius lays buried in obscurity, performing the meanest of employments, for want of being brought forth, and receiving opportunities of qualifying itself for higher functions in society ! What benefit would result to society, should we be enabled to make a just election of objects in youth, to be placed in situations capable of ripening their naturally energetic faculties !

It may be useful to speak briefly of the passions by their vulgar names, and of the simple or compound actions of the organs, which are the cause of them ; since the passions are more familiar to people in general, than any new names for the primitive faculties.

The sexual passion, as I have before related, is the result of the proper and independent activity of the cerebellum or organ

of Amativeness. In animals it is very simple; in Man, much compounded with other associations. When this organ acts in association with the organ of Adhesiveness, love is the consequence : Ideality frequently further enhances and gives a romantic character to this passion. Many other associations may be established. Thus, in the human subject, this, as well as other passions, is very compound.

What is called Anger is an affection of the organ of Combativeness ; when perpetuated by Determinateness, and unchecked by Benevolence, the consequence of the activity of this organ is often Revenge.

Fear and Terror are degrees of the activity of the organ of Cautiousness ; Circumspection is a more slow and salutary affection of it. The same organ is doubtless the seat of Anxiety and Melancholy. Hypochondriasis, when it includes the *timor lethi*, *timor orci*, or any other fear, is a morbid affection of the same organ. In hypochondriasis, Ideality often fosters many imagin-

ary and whimsical fancies, caused by the internal activity of organs, to which Cautiousness adds as many fears and perplexities. A disordered state of the digestive organs irritates the brain, and disturbs the tranquillity of its functions; and in persons predisposed by organization, excites the strange nervous fears alluded to. The organ of Cautiousness is likewise partly the cause of Horror; this, however, is a compound feeling, and has not as yet been accurately defined and analyzed. I think that Benevolence enters into combination with Cautiousness and some other organs, in the production of this passion.

The organ of Haughtiness is the seat of Selflove and Pride; Modesty is Cautiousness and Benevolence; perhaps Approbation sometimes enters into it. Jealousy is Covetiveness and Haughtiness; the objects of Jealousy varying—at different times Amativeness, Approbation, &c. enter into it: without Righteousness, or moral checks, this passion becomes Envy. Shame is Cautiousness and Philappropriativeness.

Hope and Faith are the result of Believingness. Superstition, or at least the disposition to it, is caused by the mystic organ ; or that part of the brain between Ideality, Imitation and Hope. With regard to the intellectual faculties also, the combinations of greater developement, and consequently mutual influences, form the characters. Thus the organs of Space and of Number are necessary to the astronomer. That of Music and (I think) Time, to the musician. Ideality, Comparison, Order, &c. to the poet. In all, the reflecting faculties are essential to greatness, and should be early exercised. In all, the more of the knowing faculties we have, the larger our views of the world are. And finally it is desirable to have the greatest number of perfect organs, and it becomes an object to give what we have the greatest excitement to activity by early exercise. All the facts are sufficiently proved by experience. A whole volume might be written on the functions of each organ, and many on the compound affections. In fine, as all the primitive and compound affections of

the human mind are produced by the simple or conjoined actions of one or more organs, so we see how the particular organization lays the foundation of the diversities of the human character, which education by its exercising and ripening the faculties still further varies. Thus we see why national character of mind is connected with a general outline of national form of the head.

We must never forget, when we consider education, that character has a compound cause; 1st. Innateness, or the original structure and comparative size of the different organs; and 2d. The manner in which they are educated. Neither, in education, should we overlook the effects of bodily illness on the mind, by means of its altering the tone and activity of the organs. Education being, then, the exercise of the organs, we see why precept seldom improves so much the moral character as example; and why, in both moral and intellectual attainments, those persons succeed best whose native genius has been called forth early by acci-

dental excitements to action. We see, too, how right it is in general to let young persons follow the bent of their genius; and that the great developement of any particular organ should direct the choice of studies to those who desire to excel in their particular professions.

The study of partial genius is very interesting; it leads to several important considerations respecting the origin of the arts and sciences. When an organ is large, it remembers well, executes, and often composes on the subjects of its particular function. Thus Mozart would under almost all circumstances have been a musician; J. Buxton everywhere a calculator. But if an organ be extremely large and active, then, it seems, it may originally conceive its proper science. Building, music, painting, and many others, seem to have originated in the accidental great developement of the parts of the Brain in certain individuals who were born into the world from time to time, and to whom the sciences have been thus as it were revealed. We have on record such numer-

ous proofs of the energetic conception and desire of building, making music, calculating, coloring, and so on, corresponding to the great developement of the parts of the brain allotted to those sciences, that no doubt is left of the fact. Indeed, the whole history of the new doctrine of the Brain from its commencement, and the anecdotes of facts which support it, are so interesting that I hope Gall or Spurzheim will some day publish a chronological history of the science. A few of the facts which support, and which caused originally the local division of the brain into the particular organs, are stated in Dr. Spurzheim's recent work ; and many more are related in the lectures. But the reason why all are not stated is, that they are so numerous as to render such a detail only tedious to general readers ; and cases of exception to the rules never having been brought forth by any of the adversaries of the doctrine, nor discovered to exist, such a detail is quite unnecessary. Every day has added experience ; and every marked case has furnished

new proofs to me since I first studied the science. I have even been surprised myself at the correctness of pronunciations of character, which has appeared from external signs, when I have heard from parents, schoolmasters, &c. of the correspondence between what the organs indicated, and their known habits of mind. My friend, Dr. Leach, who has also paid particular attention to the subject, has expressed the same. Gall and Spurzheim consider from their long experience, that the external indications of character are established beyond all doubt. Thus, as in animals we consider their actions as arising from their particular instincts; so now we regard those of men as arising out of more complicated instincts, influenced by sentiments and intellect of a higher order.

From the establishment of the above statements, which time may either ratify or bury in oblivion, we must expect great alterations in the education of youth. We shall see, too, that absurd doctrine explod-

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ed, which teaches, that a man of genius may employ his talents with equal advantage in different pursuits. We shall see, that though men may all be trained to obey the dictates of religion and morality, and to subserve to the laws of their country, yet they cannot think, feel, reason, or act exactly alike; and that we must cease to measure other people's minds by our own, and erect a standard of perfection on our own particular feelings, which is, in fact, to make an idol in our own image. For Nature operates everywhere on a principle of diversification, and is active in producing innumerable varieties of form; no two are alike anywhere. Thus is the mind lost in the contemplation of a principle of variety and infinite combination, on which the Creator exerts his power, as far as we know, through infinite space, and for time eternal.

SECTION VII.

Of Punishment.

Phrenology will lead to important considerations regarding criminal punishment; particularly in houses of correction. It will enable us to distinguish, not only between those who have naturally strong evil propensities, from those whom distress or other contingencies may have hurried on to crime; but will point out the particular nature of many evil propensities to be corrected. It is hoped that the learned authors of this system will more fully develop, in some future publication, its particular application to punishment.

SECTION VIII.

Of Insanity.—Conclusion.

In Dr. Spurzheim's recent work, he has said, adverting to the treatment of lunatics, and the places of their confinement, that they may more properly be called mad houses than houses for madmen. The treatment of insane persons is certainly at present very defective, and often disgusting to humanity. The discoveries of Gall and Spurzheim seem really to promise some amelioration of their medical treatment. They constitute the only scientific source of knowledge about the varieties of these interesting kinds of diseases. I have seen many instances of persons mad in organs, which may happen to be the strongest sometimes; for example, pride, religion, and

others. A very large development of the organs of ideality frequently, under circumstances of disordered action, at present little known, produces the strange imaginations of some madmen.

I think that already something has been done towards the elucidation of insanity, by the new discoveries into the brain. In the first place, the skulls of madmen are found to be much heavier, and of a more dense kind of substance than those of sane persons. This thickness and weight is probably produced by the action of slow and continued inflammation of the cerebral parts, and of the skull, by that sympathy, which is known to exist between the containing and contained parts. I do not yet know, whether partial insanity has produced thickness of the particular part of the skull immediately over it. How little had hitherto been done in the history of these disorders! How much to be done, now that we have a clue to their varieties in the dis-

covery of the independent existence of different faculties.'

The disproportionate development of different organs explains the tendency of certain persons to particular kinds of visions and superstitious opinions. Indeed, dreams and visions are explainable by Phrenology. In dreams, certain organs are awake, while others sleep. People often dream on subjects which their strongest organs incline to. Painters dream of pictures; people with the organ of colour large, have visions of colours. How is the organ of colour affected in ocular spectacles? These things can only be hinted at present. Volumes might be well bestowed

' The exact meaning of this expression can hardly be well understood by those who have not studied the anatomy of the nervous system. Indeed, throughout these observations I have felt a great deal of that difficulty of rendering my meaning clear, which, from never having learnt the English grammar, or studied elocution, I always feel in expressing my thoughts on paper. The reader must make these allowances, and study for himself the subjects to which these remarks point.

on the natural history of these sorts of phantoms of the mind. And a complete history of Insanity should trace every variety compared with the organization, temperament, and external excitement of the patient, from mere dreams and visions, up to the fixed mania of incurable madmen.

I must here observe, that the term Lunacy seems to have originated in an observation of the periodicity of disorders of mind. This is not mere fancy, though the place of the moon does not appear to be the immediate cause. There are certain periods which disorders observe; and indeed, in general, there is a periodical irritability more extensive than is generally imagined in people; the cause of which is at present unknown. Dr. Spurzheim has noticed it in his work; Darwin has described many cases; popular language and opinion confirm it. And I noticed it, and put down many observations on the supposed nature of its cause in varieties of atmosphere, in my 'Researches about Atmospheric Pheno-

mena.' I beg leave here to call the attention of Philosophers to the following circumstance. At the periods of irritability alluded to, I have noticed a very unusual arrangement of the clouds, indicating, I think, a great disturbance in the atmospheric electricity. The singular distribution of the electric fluid in the atmosphere, I infer, often occasions the multiform and ever-changing configurations of the clouds, particularly the Cirrus; for these are now admitted to be electrical phenomena.'

I may in conclusion advert to the metaphysical results of the recent investigations into the physiology of the organs of animal life, with a view to lead to that comprehensive system of the philosophy of the mind, which is the legitimate deduction from premises which an examination of these functions has established. It tends to show,

¹ I must refer to my *Researches about Atmospheric Phenomena*, Baldwin, and Co. London, second Edition; and to *Cabanis Rapport du Physique*, &c.

1. The nature and limits of the influence of external impressions in the production of our ideas ; which result, 1st, from the reaction of the organs in consequence of external impressions, adapted by nature to them, constituting perception—or, 2dly, from the inherent or internal activity of the organs, acting by themselves without external impressions, or from some internal stimulus, constituting variously, as modified by mutual influences, and by the nature of the internal action of the original conceptions of particular genius ; which are, as it were, revelations of sciences and arts, from the great size and activity of particular organs. This consideration also explains visions and dreams, which are the consequence of the internal activity. Indeed, a very curious history of the varieties of dreams, and other internal affections, might be made from considering what organs are active in different cases, and by noticing the effect produced towards waking, when the organs of the reflecting powers begin to act.

2. We see from the physiology of the organs, the nature of true and false perceptions. True ideas or perceptions result from the conformity of the action of the organs to the nature of the impressions from without, to which they are adapted. Memory,—a repetition of actions originally excited by external things. Imagination,—new combinations produced by the influence of a distinct and separate faculty on other organs. Genius, or original composition,—the great internal activity of an organ: this is influenced more or less by the organ of ideality, &c. And lastly, we see that false ideas or impressions must be referred to irregular or disordered action of the organs, which disordered health and misguided education may excite on an organization, erroneous in the proportionate development of the different organs. This leads to the consideration of the different mental derangements hereafter to be spoken of.

3. The physiology of the organs shows where metaphysical philosophers were right,

and where wrong, in certain opinions ; explains the relation between the Berkleian philosophy, which denies external matter, and the materialism of Priestley. In other words, we hereby see where was the defect of consideration in the disciples of Kant, who were divided about objective and subjective reality. Long before I became acquainted with the new physiology of the Brain, these subjects engaged much of my attention, and I felt convinced, that a radical difference in the conformation of the mind must be the cause why certain people only regarded the objectivity, and others only the subjectivity ; and why others saw clearly the reality was the result of the reaction of the impressions of the object on the subject. I know persons who are defective in the organ of Individuality, who, when they are ill of nervous affections, have told me that they have felt as if the external world did not exist, but that all ideas were entirely within themselves. All these things, however, must now be superficially treated as varieties of insanity, as connected with particular organization and established

mutual influences.—I mention these facts in a hasty and imperfect manner; they will become the subjects of future consideration of persons more qualified.

There is a secret pleasure the mind feels in contemplating the progress of knowledge; and those who regard the system of Phrenology in the light which its authors do, will rejoice, that in this wilderness of error and ignorance, the thirst after knowledge is at length excited; and hope that it may prevail through the world, and that it may be quenched at the fountain, which first flowed in Germany, and is spreading its streamlets around.

I can only conclude by encouraging others to the same patient investigation of facts, which led me to embrace this system of Anthropology, that the beneficial results may be generally felt, since now the tyrants and bigots, which awhile ago oppressed the earth, can no longer resist the propagation of truth—and at a time when Philosophy

will at length exert her influence over the world in peace.

SECTION IX.

Of the ultimate Achievements of the Anatomy and Physiology of the Brain, and of its Limits.

It is constantly asked in examining any new doctrine, what ultimate good will result from it. It has been the constant question proposed to me, by those who have heard me discourse of the anatomy and physiology of the Brain. I have constantly replied, that an intimate knowledge of the human character communicated in a language which cannot speak falsely, will be the immediate consequence of a general knowledge of such facts as we already know, relative to the external indications of character. I have also said that we shall make use of this knowledge for the improvement

of the education of young persons, for the reformation of miscreants, and for the medical treatment of the insane. What is already known will contribute, in a very eminent degree, to the accomplishment of these desirable objects. It may be proper, however, to advert to the probable results of a still more intimate acquaintance with the primitive faculties of the mind and their respective organs, and the laws which regulate their mutual influence on each other. We do not, at present, know much about the mutual influence of the organs; but our knowledge of the subject is rapidly advancing.

There is one thing, of which there still remains some doubt, and which it is of great importance to know; namely, what effect may be produced on the physical development of the different organs by external compression, and by the agency of other physical means. I have already stated, that education which is the most important object of this system is twofold, moral and physical, because the character

has a compound origin ; firstly, the original development of the different organs, and their mutual influences ; and secondly, the activity into which they are called forth by discipline. I have already spoken of the means to be adopted for the improvement of the latter, by adapting a mode of education to the particular bias of original genius, or by giving additional activity to the organs naturally defective in developement. But I should think the most important cause of character was innateness, or the physical developement of the organs. To have children, therefore, with energetic organs developed in the proper proportion to each other, is the primary and most essential object which we must have in view, when we are desirous to improve society by the generation of energetic and good characters. At present we only know of one means of attaining this desirable end ; namely, by intermixing the breed of persons, as farmers and horse-breeders do that of animals. As it can only be the philosophic part of mankind, who would choose

females in marriage on this principle ; and as the bulk of the people will be regulated more by their particular desires than by any views towards the amelioration of society, it would be desirable to acquire other means of modifying physical character.

If, by compressing certain parts of the head in infancy, we could really diminish the developement and the activity of particular organs, and thereby give greater energy to others, we should have another means of altering the physical condition of character. It has been asserted that the Caribs alter the form of their foreheads by external pressure. This fact is by no means proved ; and if it was proved the question would return—Has the alteration thus artificially produced in their forms diminished the developements of the organs compressed, or has it only caused them to expand in a different direction, and thus destroyed the external indications without really affecting the character ? But it may be observed, that the character of a Carib corresponds with

the form of the head; a circumstance which brings the question into a smaller compass. For having ascertained that the exterior form of their skulls corresponds with their character, it only remains to be ascertained how that form was produced. We have no reason at present for thinking, that it is produced by external pressure, as the accounts of these people are extremely vague and indefinite. I have asked persons who have travelled, concerning the manner of the alleged external pressure, without obtaining any accurate information; and Dr. Spurzheim has examined many more people than I have on this subject with as little success.

I must again recommend those who wish to enter deeply into this very curious branch of the subject, to make themselves intimately acquainted with the primitive faculties and their external indications by a regular attendance on the demonstrative Lectures of Dr. Spurzheim; and I must further add that in the few lectures I have of late given to my friends on

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this subject, I am conscious of such a deficiency of examples brought forward, and of so few skulls exhibited and compared, that those persons who may think they have obtained an accurate knowledge of the subject from them, will be much deceived if they think they can apply the principles to practice, unless they enhance their knowledge by a more extensive examination. Every day has added to my own experience some new fact ; and though my attention has of late been almost exclusively directed to the anatomy and to the physiology of the brain in general, I am still occasionally deceived at first sight, about the proportionate developement of some of the organs, particularly where they are not insulated. Those, therefore, who have but slight acquaintance with this subject, made during the attendance at a few Lectures, must not conceive that the indications are unsatisfactory and vague, because they cannot yet read them. And I trust they will not do this doctrine harm in the opinion of others, by fancying they can yet pronounce accurately on character ; as

some persons have done, who have induced by-standers by their erroneous judgments to consider the whole doctrine of indications as false. I am conscious how much before me Spurzheim is advanced in power of pronouncing on the organs; and I am further conscious how very limited and imperfect are the views which people in general have taken of the subject, who have only given it a superficial examination. I mention this from a belief that persons who confess themselves to have knowledge of the external indices of character, will do more harm by one erroneous pronounciation than by five thousand confessions of inability to read the external tokens.

To revert to our anticipations of what may yet be done by an active pursuit of this science, I must observe that before we study the compound affections of the organs, we must know well their primitive functions. Having ascertained what faculties are primitive and what are compound, the next object of research is, their mutual influences. We cannot know the laws of

these till we first observe in a greater number of cases, what mutual influences actually exist; and what connection is observed between them, and the relative size of the different organs.

If we consider that the differences of character consist in different proportions of thirty three organs, and that in the production of character, any of these thirty three organs may bear any proportion to any of the rest, we shall arrive at some idea of the immense series of combinations which form the physical basis of character, and of the consequent difficulty of the subject.

By constant perseverance, we shall arrive at more certain methods of determining character than we have at present; and consequently of applying a suitable education in infancy. I can see, however, certain limits of our knowledge in this respect. There are many curious and unusual affections of organs, which must be referred to idiosyncrasy, and there are cer-

tain mutual influences of a nature, which appear on a superficial view quite unexplainable on the usual principle of the position of their respective organs. We may probably never discover the cause of these, neither I think shall we ever know the moving principle, which during life is the cause of the active or living state of our organic apparatus. Nearer this we are not than the ancients were, we have no means of knowing it. The constant desire of certain minds to comprehend causes has filled the world with numberless theories of life and mind, which contradict each other, and show the futility of enquiry wherever direct evidence is wanting. We are contented to leave untouched these investigations. We do not find that we are constructed by nature to accomplish our wishes on this subject : we prefer reasoning only on facts, and are contented with what nature has permitted us to know. We are now in some measure conscious of the limits of our enquiries, and do not recommend indulgence in wild and metaphysical speculations, which all sober philosophers have

always eventually given up as futile ; and which we are sure will not only be attended with disappointment in the fancied accomplishment of their objects, but will divert the mind from the discovery and appreciation of the truth.

The adversaries of our doctrine have not been inactive in bringing arguments against it. This is only what might naturally be expected. We never could suppose that persons would be convinced in a short time of doctrines, which are not only new and at variance with many popular opinions of philosophers and schoolmen, but which have resulted from such a laborious investigation of facts, and such a series of reflections, as few have had opportunity or inclination to make. And though we only wish to excite a fair investigation of their truth by persons qualified for the task, and desire to hear all rational objections : yet we wish to be understood, before we are controverted ; and are only displeased to hear objections in proportion as they are the result of miscon-

ception in persons who are unwilling to be at the trouble of investigating these statements. I have felt myself a great reluctance to admit the truth of the doctrines as they were originally published by Gall; and although some previous notions which I entertained about the functions of the mind, made me soon embrace as probable the Philosophy of the new doctrine; yet nothing but a patient examination of the particulars both respecting the Anatomy and Physiology of the Organs could have given me such a clear view of the subject and its different bearings, as now enables me to pronounce, however rash it may seem, that our doctrine is absolutely incontrovertible by any metaphysical arguments. And that it remains for our adversaries to show, if they can, that the alleged facts on which it is founded are false.

We only solicit persons to convince themselves of their truth by examination, and to suspend their judgments on our doctrines till such an examination has been made.

The organology has frequently been ridiculed ; but ridicule is no test of truth, and may be employed on any subject and for any purpose. An abundance of apparently irrelevant arguments have also been brought forth. There has been such a reiteration of objections, all obviously arising from want of due attention to the subject, that I can readily anticipate their reoccurrence as different persons begin to acquire some knowledge of this system. In conclusion, I must repeat that the principal thing we wish is adequate examination and reflection on the part of philosophical persons.

When I reflect myself on the progress which the Anatomy and Physiology of the Brain has made in so short a space of time, I feel really surprised that the object which philosophers for ages have laboured to establish—systematic principles of the Philosophy of Mind, should be brought in a few years to such perfection. And whenever I indulge in leisure from the active pursuit of the subject, I reflect with wonder on its origin

and progress, and anticipate with pleasure the beneficial influence it may exercise on society.

I here insert the Letter of my friend Dr. Leach, above alluded to.¹

“ MY DEAR FORSTER,

“ Having heard that you are
“ preparing an analysis of Spurzheim’s Physiological
“ System of the Brain, I am induced to write a few
“ hasty lines on the subject of his doctrine.

“ Certain Anatomists in London, (and one in Edinburgh,)
“ have absolutely denied the truth of Dr. Spurzheim’s
“ observations on the structure of the Brain, and have
“ pronounced them to be fanciful. These assertions
“ have not been made by those who have seen him
“ dissect the brain, but even by those, who from illibe-
“ rality or from idleness, are not inclined to investigate
“ the subject, and therefore have ridiculed as false,
“ what they are too indolent to examine. After a
“ minute investigation, I do not hesitate to pronounce,

¹ The reader will find an interesting series of Notes, taken from Dr. Spurzheim’s lectures, in the Philosophical Magazine ; and in the Star Newspaper.

- “ that what Dr. S. has asserted respecting the struc-
 “ ture of the brain, is perfectly correct, and that this
 “ structure may be seen by any anatomist, who may be
 “ disposed patiently to examine that organ, after the
 “ mode directed by Dr. Spurzheim.
- “ Respecting the indications of the propensities and facul-
 “ ties, named organs by Drs. Gall and Spurzheim,
 “ I am of opinion, that certain manifestations are satis-
 “ factorily proved to exist, that others are rendered
 “ probable, and that the remainder are extremely
 “ fanciful, not being in any manner supported by evi-
 “ dence.
- “ I believe that a developement of the crown of the head
 “ is a certain indication of moral feelings—That a de-
 “ velopement of the upper part of the forehead indicates
 “ a reflecting mind, whilst a developement of the lower
 “ part manifests a disposition to acquire knowledge;
 “ and that a developement of the whole forehead, (as
 “ every one must have observed,) indicates a strength of
 “ the intellectual faculties in general.
- “ From actual and repeated investigation, I am disposed
 “ to admit Nos. I, II, VI, VII, VIII, IX, XI, XII,
 “ XIII, XVI, XVIII, XXVII, XXVIII, of Dr. Spurzheim,
 “ as decided marks of the propensities, sentiments, and
 “ faculties, so marked; and that Nos. V, X, XIV,
 “ XXXII, and XXXIII, are probable signs; whilst all
 “ the other numbers seem to me to want evidence of
 “ their indications, which have not in the slightest degree

“ been proved by substantial or even by plausible con-
 “ jectural evidence.

“ You well know, that truth is my sole aim, and that if
 “ any part of the doctrine be disproved by sufficient
 “ evidence, I shall be as readily disposed to relinquish,
 “ as I have been to admit, the truth of certain parts of
 “ the system.

“ I remain, Dear Forster, in haste,

“ Yours, very truly,

“ WM. ELFORD LEACH.”

British Museum, 31st Jan. 1815.

Memoir

OF

PHYSICAL EDUCATION.

I HAVE already advised the reader of our opinion that the organs of the mind are produced, repaired, nourished and liable to decay and disease, in a manner similar to that of other nerves and other parts of the body. To convey, however, to those who have not maturely surveyed the subject before, an adequate idea of the effect and importance of physical health, I may advert to the general view I have of the nature of vital actions in general; and to certain

sympathies observed in the animal machine.

First, Sensation is a property of the Brain and Nervous System alone. Where the nervous communication is cut off, there is no sensation in any part, and where there is no Brain, there is no consciousness. Consequently, sensation of pleasure or of pain is in the Brain and Nervous System. All the pleasant and the painful sensations of which an animal being is conscious, whether they be of that sort commonly referred to the body, or of that higher character which we designate by the name of mental operations, are actions of the Brain and Nervous System. Excitability and vigilance are the result of this activity, torpor and sleep are inactive states of the Nervous System and of the Brain.

In inflammation of the skin, or any part of the body, we have an exaggerated sensibility of the nerves and consequent pain ; so in phrenitis, we have excessive excitability of the organs of the brain, and consequent

madness, and irregularity of thought. The contrary states are, in the nervous system, torpor and numbness, in part from compressed nerves or from confusion : in the brain, stupor, and abolition of thought, as in concussion or pressure of its organs. Particular nerves of the body, and consequently the functions of parts to which they are distributed, may be deranged independently of others. So in the brain, particular organs being separately deranged, their respective faculties are abolished or perverted.

Again, inflammation of various parts of the body produces often thickning and condensation of substance. In like manner, when the faculties of the mind are deranged in madness, a slow and a constant inflammation of the organs of the Brain is inferred from effects extremely similar to those adverted to. We find the skulls heavier and denser than those of sane persons. The Brain itself too has been said to be harder in its substance. Some have maintained that the blood in the head is the cause of nervous diseases. Analogy leads us to re-

fer to the particular activity of the Brain and nerves, all those effects in disease and in health, which can only be referred to the blood as secondary in the chain of causes.

Finally, health of body is a pleasurable feeling of the whole nervous system of the body in general, resulting from the commensuration of excitement to the natural excitability of the nerves. Analogous to this is the mental pleasure of saneness, which results from an excitation of the organs of the mind proportionate to their nature and powers. True perceptions are the result of this accurate adaptation of the parts of the Brain to the stimulus from without which excites them. The contrary states are, in the nervous system of the body, illness from morbid activity, producing either overexcitation or lassitude, and weariness; in the organs of the Brain, painful affections or ideas, ennui or want of excitement, and erroneous perceptions of mind. I think it results from the above premises, that all the diseases of animal existence, whether mental

or corporeal, numberless as the sands of the shore, and various in their effects as the infinite shades and combinations of colour, are to be referred ultimately to varieties in the morbid affections of the organs of the Brain, and of the Nervous System of the body. An opinion which in my mind cannot be shaken though it may be perplexed by the mysterious obscurity which overhangs the decided character and identity of symptoms in some, the whimsical variety in others, the strange laws of the remote sympathies which extend them to distant parts of the body, or the multiform stimuli which excite them in a manner at present unknown ; or the various medicines which counteract and cure them by a mode of operation of which we are at present confessedly ignorant.

We must not be misled by the ostensible affections of particular parts in diseases, as of the sanguiferous vessels, in inflammation. For all these, like the natural actions and natural secretions of the

parts in health are under the influence of those powers which we have abundant reason to regard as the primary and essential conditions of animal life.

Regarding then the Brain and Nervous System as constituting the essential conditions of life, and as being the cause either of health or of disease, according to their different affections, we see how important, in a medical point of view, is the minute investigation of the structure and physiology of every nerve, and of the mutual influences of each on the rest; comprehending those mysterious laws of associated actions, whereby diseases occur in parts or organs remote from those, whose injury or disorder primarily disturbs the healthy condition of the animal fabric, and which are commonly referred to sympathy. The effect of poisons operating on the extremities of nerves, or by means of introduction into the blood, on the whole body, and the nature and causes of all diseases must be sought for in affections primarily of the Brain and Nervous System.

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tem. At present we know almost nothing of diseases but their symptoms, and some of the cures which experience has pointed out. The science of medicine is however admittedly capable of improvement, and experience and analogy are the means of improving it. But every experiment will have more weight if contemplated with a correct view of the general principles of life. Our knowledge of the minute structure and functions of parts and of the laws of association are necessarily imperfect, but we have already sufficient reason to ascribe all the vital actions to the Brain and Nerves. I believe no physiologist will deny this now-a-days. Considered then in no other point of view than that of investigating the structure and functions of the instruments of all vital actions; the inquiries we are pursuing are of the greatest importance to physiology.

Various attempts have been made from time to time by anatomists to explain sympathies in diseases, by the internal structure and arrangements of the nerves. Anatomists have even supposed central

points of union in the brain, and have filled books with theories of this kind founded only on supposition. But on the other hand many anatomists have now rejected, as absurd, principles of the same kind, which we admit as causes of many hitherto unexplained phenomena both in health and diseases, merely because, from their being originally founded only on facts, and pursued without a view to any particular theory, they have shone in the native lustre of truth, unperplexed by theoretical fancy, and have thus been extended and have led to the explanation of phenomena of mind, for which hypothetical philosophers had never before been able to assign any plausible cause. Believing, however, that we actually have sufficient proof that all the faculties of animal existence, whether bodily or mental, have material conditions in the Brain and Nervous System ; and that all the diseased actions, which they are liable to, are subject to constant and general laws of action, we are solicitous to submit the curious facts whereon this opinion is founded, discovered by Gall and Spurzheim,

to the judgment of those who will take the trouble patiently to learn them, and to publish from time to time with the same view the further observations which we are daily making. But those who are ignorant of the facts, and who will not take the trouble to learn them, are incompetent to judge of their bearings, and consequently incapable of giving an opinion of the validity of the doctrine.

To return to sympathy, I may observe that there are various sympathies, which may be possibly traced to organic causes that are demonstrable ; such for example as ganglia, and other nervous communications. There are however many of the causes whereof we are utterly ignorant ; but which must depend on some general laws, which constant assiduity by future inquiries may illustrate in course of time. I believe none of the attempts already made to explain remote sympathies have succeeded. I shall endeavour to excite attention to this important subject by adverting to a few well-

known disorders of the Nervous System, which occur in consequence of disorders of remote organs in the body. Whence we shall see the high importance of physical health to mental strength and activity; and also the great attention we ought to pay to the diet and habits of children.

When the digestive organs are out of order, we find that the head always sympathises more or less with them. If the stomach be loaded, and the peristaltic action weak, the thoughts do not flow with their accustomed activity. An habitual state, therefore, of plethora and of defective digestion, which may be the consequence of too much food, may induce in young persons habitual dulness and inactivity of the Organs of the Brain. The immediate sympathy of the Brain with the stomach is illustrated by the various effects produced by green tea, by wine, and by poisons taken into the stomach. Every thing which stupifies the Nervous

System and Brain by plethora, or which exhausts the energy by too great excitement, must lead when habitual to an imperfect performance of the functions of the mind as well as those of the body.

Disorders frequently begin, primarily, in the organs of the mind. The premature developement of nervous parts renders them weak and less durable than those which have been seasonably matured. To exert therefore the organs of the Brain too early, particularly when there is any premature developement, is injurious. We often see too early geniuses, for this reason, disappoint the sanguine expectations of those, who have rashly exercised too soon the faculties of those hopeful prodigies. So complex is an animal being, and so diversified is nature, that we might expect, in a great number of cases, to find in many an incommensurate developement of certain parts of the machine: these may be too weak or too energetic for the rest; and thus we have a foundation for the determi-

nate seats of diseases in the comparative weakness of parts, which may be excited into morbid action by sympathetic causes, particularly disorders of the digestive organs; which from being more exposed to violence, from the unnatural manner in which we stimulate them, and from the great connection which must necessarily exist between such important organs and the Brain, are constantly the source of sympathetic diseases; which people, judging of only by their ostensible symptoms, attribute often to local and consequently erroneous causes.

Disordered action in the organs of the Brain may produce disorders of the digestive organs, which by reaction may aggravate and perpetuate the state of disorder already excited. The influence of the organs of the Brain in susceptible persons on the stomach and bowels, and thereby on the general health, must be familiar to every body. How often is Anxiety, or the violent and distressful affection of the organ of

Cautiousness, the cause why food does not digest, and the patient wastes away? How often bad news or sudden anger destroys the digestion of food recently taken, and produces sickness and loss of appetite. Particular organs have, too, a sort of specific effect in sympathies. Does not Shame, (or Philapprobateness and Cautiousness,) determine the blood to the face in blushing? and does not Fear, which is Cautiousness acting alone, drive the blood from it? These are associations which appear to be established, but of the cause of which we know little at present.

Various examples might be adduced, both of the power of the organs of the mind over health of body, and of the effect of disorders primarily excited in the viscera on the organs of the mind. From whatever cause or combination of causes the viscera become diseased; they affect, in various ways, the organs of the Brain and other parts by Sympathy. I shall conclude by adverting to a few of these sympathies, and by

adding a few remarks on the advantage of a healthy state of the viscera, as a means of preventing the disordered, and giving the greatest degree of activity to the healthy, actions of the organs of the faculties of the mind.

In madness it has been observed that the particular character of the false ideas has a decided connection with the organization of the afflicted person. Thus, when the organ of haughtiness has been much developed in mad persons, they have fancied themselves kings, emperors, Jupiter, or other great personages. When to this organ that of veneration has been highly developed, their minds have received a religious tendency, and they have supposed themselves saints and elect persons. I could advert to several cases of this kind.

Similar phenomena attend less determined sorts of insanity. When the Nervous System is violently irritated and the reflecting powers weak, the morbid irascibility, the sullenness, the melancholy, and the fancies

of hypochondriacism, seem determined in their nature by the proportion of different organs. Particular states of visceral disorder, aided by external circumstances, often excite these derangements of mind; which subside when the digestive functions are again healthy.

There can be no doubt that melancholy is an affection of the organ of cautiousness. I allude now to constitutional melancholy, as distinguished from grief or depression, occasioned by loss, or other external circumstances.

If we analyse melancholy, we shall find the dread of some evils, either real or imaginary, to be an essential characteristic of the disease. This fear and anxiety is evidently an effect of an irritated state of the organ alluded to. The whimsical subjects of terror often imagined, result from the morbid internal activity of the intellectual faculties, but the sentiment of fear attached to them must be the action of its proper organ.

Disorders of the digestive organs keep up nervous irritability and weakness, and thereby maintain such unnatural action of the organ alluded to, as I have stated to constitute hypochondriasis and melancholy.

— Conformably to this view of the subject we have observed, that persons endowed with a large organ of Cautiousness are more disposed to this disease, as well as more liable to feel common fear and anxiety than those are in whom other organs preponderate. But disorders of the digestive organs excite even in the same person, at different times, very dissimilar symptoms. Coughs, rheumatism, headache, convulsions, cutaneous eruptions, and numerous other complaints seem to follow as the sympathetic consequence of a very similar state of disorder in the chylopoietic viscera. Consequently, we must admit either that there is something different in these visceral disorders which we do not discover, or that there are other states of the Nervous System which determine the precise nature

of those secondary symptoms in diseases, which apparently similar disorders of the chylopoietic viscera seem primarily to excite.¹

¹ The ancients denominated depression of mind by reference to black and irritated secretions of the bile; we may consult Hippocrates, Galen, Celsus, and others.—“The remarkable dependence of sensorial and mental disturbance on a disordered state of the abdominal viscera, appears to have been well known by the earliest writers on medicine, in the infancy of science. It is a doctrine frequently alluded to by the poets of old; and its origin seems lost in the night of history. Modern physiologists have developed the counterpart of this important branch of the ancient pathology, and have pointed out the immediate sympathy of the viscera with diseases and injuries of the head, and with anxiety and agitation of the mind. This is, perhaps, the proper place to introduce to the reader's notice a habit which is often productive of the most calamitous consequences, as it tends to illustrate what has been said above. A person suffering from a temporary loss or disappointment, has recourse to the use of wine or spirits, the stimulus of which affords a momentary relief from mental sufferings. A disordered state of the digestive organs is, however, invariably the consequence of such practices, which, reacting on the sensorium, increases the mental disorder, and gives it a peculiar character. The patient, now, is not only distressed about the original subject of grief, but takes atrabiliary views of every surround-

In disorders of the organs of digestion, all the viscera partake, probably, more or less in that irritation and depravation of function which generally prevails ; but one organ may be more affected than another. I believe the degree in which hepatic irritation occurs, and which is marked by

ing object. The constant habit of drinking, by weakening the digestive powers, predisposes the viscera to disorder ; and by this means renders them more liable to be affected by the mind, and to react on it to the aggravation of the original disturbance. Thus spirituous and fermented liquors can convert common grief, which in health would soon subside, into a compound of mental and bodily derangement, which, by its very nature, must be aggravated in its progress, which may produce organic disease, may thereby become incontrollable by medicine, and may eventually terminate in madness. Such cases sometimes happen where no spirits or wine have been drunk. A reverse of fortune, disappointment in love, or some trivial disappointment, has been known to derange the minds of persons comparatively temperate, and who could not be suspected of excess : but even in these cases, disorder of the digestive viscera, from whatever cause or combination of causes induced, seems to be a principal feature in the malady. To the reaction of the body on the mind we must attribute effects so obviously incommensurate to their apparent causes." See an Essay "On Fermented Liquors, by a Waterdrinker."

depravation or want of bile, is frequently the measure of the irritable and melancholy affection of mind. There seems, therefore, a general sympathy of the whole constitution with the organs of digestion; and a particular sympathy of the Brain with the liver, especially the Organ of Cautiousness. This particular sympathy, dependent on some established laws of nervous influence, explains why persons may be in some degree melancholy, in whom the requisite organization is small. And it shows, what we find also by experience, how much the symptoms are enhanced by an organization favourable to the disorder.

In Hypochondriasis, we must distinguish the erroneous perceptions, which are a morbid activity of the intellectual organs, from the sentiments of fear and anxiety, of hope, or other feelings which act with them from Cautiousness, &c. Just in the same manner we must distinguish in health.—Ideality only gives the romantic feelings of the poet. His imagi-

nations of places, forms, colours, heroic actions, analogies, &c. result from his intellect active in producing internal ideas, and forming new combinations. In the same manner the visions, ghosts, and omens seen, and the imagined voice of angels heard by mystic people, are the internal activity of the intellectual organs: for they are visions of some form, colour, &c. But the Organ of Mysterizingness joins the mystic sentiment, and we attach to them ideas of future consequences. It reads in them ominous predictions, and with Ideality and Believingness, makes us discover in these imagined beings, the prognostications of good or evil, the prophecies of future destiny. For similar feelings about future events are excited whether it be by imaginary beings, as ghosts and phantoms, or by real existences, as crows, ravens, owls, and other ominous creatures, to which the Organ of Mysterizingness and the mythology of antiquity have attached ideas of mysterious and supernatural influences.¹

¹ I have sometimes thought that many different sympa-

On the laws of association and mutual influence must depend the occurrence of these peculiar sentiments, coterminously with the ideas or perceptions of particular objects. Modified in every person as infinitely as the shades of countenance, and depending on laws at present unknown, they must become the interesting subject of future inquiry. But we must eventually seek for their causes in the organic arrangements of the Brain, and in the different modes of its action.

It seems to me a curious circumstance that physicians, who so clearly saw and admitted melancholy and hypochondriasis to be diseases of the body, should have regarded more determinate madness as a disease of the mind. These terms, however, were indefinite: at present we must regard both; in short, all diseases where the mental thetic affections might be produced according as different parts of the alimentary canal were affected by irritative matter, moved by the peristaltic action through the intestines.

functions are deranged, as diseases of the Brain, either sympathetic or idiopathic. Finally, all the various disorders of mind depend on the modified disorders of the organs, whose particular faculties are deranged. Thus have we a clue to the definition and natural history of insanity, a thing so long and so much wished for. And thus I hope that current opinion is counteracted which many held, that the disorders of the mind were a class of maladies whose cause we could never ascertain: because they had not hitherto discovered them by means of their imperfect dissections of an organ whose structure they did not understand, and of whose special faculties and their seats they had not the slightest conception.

We see from the above statements the importance of physical education, or the care of our bodily fabric, secured by upholding a healthy state of the digestive organs, and by a salutary exercise of all the parts of the nervous system. We see also that moral education is in reality the exercise

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of physical organs ; and that whatever that principle is whereby the organs act, and whereby we become beings conscious of ourselves and of the world, its pretended diseases depend on erroneous actions of the material conditions of the faculties. These views of nature do not do away moral good and evil ; they have no tendency to materialism, or to the doctrine of necessity ; they cannot militate against moral conscience and responsibility for actions, or in any way support the arguments of atheists, or affect the interests of religion. But, on the contrary, they coincide more with the opinions of those who, discarding the subtleties of scholastic philosophy, have regarded evil as within ourselves, but capable of controul by the superiour faculties. Finally, it has been shewn, that our doctrines are favourable to the operation of moral laws, because they shew the natural limits and proportion of activity of every faculty, and point out means in education of approximating towards perfection, by subjugating the propensities common to men and animals to sentiments and intellectual faculties which are proper to man.

Some persons have objected to our use of the newly formed names, instead of those before in popular use. But these old terms were used in various meanings and did not define so precisely the primitive faculties of the mind, as they were capable of being defined by a new set of terms. Dr. Spurzheim, therefore, constructed a new nomenclature for this purpose, founded on the idiom of the English language. In thus making a systematic nomenclature, only a few new words were made, the major part were in use before. Dr. Spurzheim has given the reasons of this nomenclature in his own work. I adopt them for the same reasons, and have ventured in a few cases to substitute others on the same principle of more clearly defining the primitive faculty.

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